CLAIMS

1. A capacity measuring device comprising:

a semiconductor substrate;

an electric element provided on said semiconductor substrate and having a plurality of electrodes;

a plurality of first terminals each electrically connected to each one of said electrodes of said electric element;

a plurality of guard rings made of conductor and arranged such that said guard rings surround said first terminals; and

a second terminal electrically connected to said guard rings.

2. The capacity measuring device according to claim 1, wherein said electric element comprises:

a device pattern formed on said semiconductor substrate, composed of a plurality of regions, and having a size and a shape substantially identical with those of a device which is formed in an integrated circuit and has a plurality of regions between which there are electrostatic capacities, of which values are to be found;

a first insulating layer formed on said device pattern;

a plurality of extension metal wirings formed on said first insulating layer and connecting said regions of said device pattern to a measuring apparatus;

a guard electrode formed on said first insulating layer by the same process as that of said extension metal wirings such that said guard electrode surrounds said extension metal wirings; and

a second insulating layer formed on said extension metal wiring and guard electrode,

said first terminals are formed on said second insulating layer and comprise a plurality of measurement terminals for connecting said extension metal wirings to said measuring apparatus,

said guard rings are formed on said second insulating layer by the same process as that of said measurement terminals such that said guard rings surround said measurement terminals and electrically connected to said guard electrode, and

said second terminal is formed on said second insulating layer by the same process as that of said measurement terminals for connecting said guard electrode to said measuring apparatus.

3. The capacity measuring device according to claim 1, wherein said electric element comprises:

a device pattern formed on said semiconductor substrate, composed of a plurality of regions, and having a size and a shape substantially identical with those of a device which is formed in an integrated circuit and has a plurality of regions between which there are electrostatic capacities, of which values are to be found;

a first insulating layer formed on said device pattern;

a plurality of first extension metal wirings formed on said first insulating layer and connecting a part of said regions of said device pattern to a measuring apparatus;

a guard electrode formed on said first insulating layer by the same process as that of said first extension metal wirings such that said guard electrode surrounds said first extension metal wirings;

a second insulating layer formed on said first extension metal wirings and guard electrode;

a plurality of second extension metal wirings formed on said second insulating layer and connecting other part of said regions of said device pattern to said measuring apparatus; and

a third insulating layer formed on said second extension metal wirings,

said first terminals are formed on said third insulating layer and comprise a plurality of measurement terminals for connecting said first and second extension metal wirings to said measuring apparatus,

said guard rings are formed on said third insulating layer by the same process as that of said measurement terminals such that said guard rings surround said measurement terminals and electrically connected to said guard electrode, and

said second terminal is formed on said third insulating layer by the same process as that of said measurement terminals for connecting said guard electrode to said measuring apparatus.

4. The capacity measuring device according to claim 2, wherein said device, of which electrostatic capacities are to be measured, is a MOS transistor.

5. The capacity measuring device according to claim 3, wherein said device, of which electrostatic capacities are to be measured, is a MOS transistor.

6. A method of measuring an electrostatic capacity between any two first terminals of a capacity measuring device, which comprises a semiconductor substrate, an electric element provided on said semiconductor substrate and having a plurality of electrodes, a plurality of said first terminals each electrically connected to each one of said electrodes of said electric element, a plurality of guard rings made of conductor and arranged such that said guard rings surround said first terminals,

and a second terminal electrically connected to said guard rings, said method comprising the steps of:

disposing said capacity measuring device in a prober of a capacity measuring system and electrically connecting said second terminals of said capacity measuring device to said prober;

connecting one of said two first terminals to ground potential through a first shield wire, which has a first outside conductor connected to said prober so that said first outside conductor has a potential equal to a potential of said prober;

connecting a non-inverting input terminal of an operational amplifier to said prober so that said non-inverting input terminal has a potential equal to said potential of said prober, said operational amplifier having an output terminal connected to an inverting input terminal thereof through a feedback resistor;

connecting the other of said two first terminals to said inverting input terminal of said operational amplifier through a second shield wire, which has a second outside conductor connected to said prober so that said second outside conductor has a potential equal to said potential of said prober;

applying an alternating current signal between said non-inverting input terminal of said operational amplifier and said ground potential to provide an output voltage at said output terminal of said operational amplifier; and

calculating a value of said electrostatic capacity between said two first terminals based upon said output voltage of said alternating current signal.